AMERICAN

CHEMICAL JOURNAL

EDITED BY

IRA REMSEN

PROFESSOR OF CHEMISTRY IN THE JOHNS HOPKINS UNIVERSITY.

VOL. XXIII. JANUARY–JUNE. 1900.

BALTIMORE: THE EDITOR.

THE CHEMICAL PUBLISHING CO., PRINTERS,
EASTON, PA.

CONTENTS VOL. XXIII.

No. 1.

CONTRIBUTION FROM THE KENT CHEMICAL LABORATORY OF THE UNIVERSITY OF CHICAGO:

On the Molecular Rearrangement of o-Aminophenylethyl Carbonate to o-Oxyphenylurethane. By James H. Ransom . 1

DIAZOCAFFEINE. By M. Gomberg 51

THE ACTION OF ETHYL IODIDE ON TARTARIC ESTER AND SODIUM ETHYLATE. By John E. Bucher 70

NOTE.

Improvements in the Manufacture of Sulphuric Acid . . . 83

REVIEWS.

The Soluble Ferments and Fermentation 86

Einführung in die Chemie in leichtfasslicher Form 88

No. 2.

ON SOME ABNORMAL FREEZING-POINT LOWERINGS PRODUCED BY CHLORIDES AND BROMIDES OF THE ALKALINE EARTHS. By Harry C. Jones and Victor J. Chambers 89

CONTRIBUTIONS FROM THE CHEMICAL LABORATORIES OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY:

XXIII.—*The Preparation of Pure Tellurium.* By James F. Norris, Henry Fay, and D. W. Edgerly . . . 105

XXIV.—*The Reduction of Selenium Dioxide by Sodium Thiosulphate.* By James F. Norris and Henry Fay . 119

ACTION OF PICRYL CHLORIDE ON PYROCATECHIN IN PRESENCE OF ALKALIES. By H. W. Hillyer 125

CONTRIBUTIONS FROM THE CHEMICAL LABORATORY OF THE ROSE POLYTECHNIC INSTITUTE:

XVII.—*Camphoric Acid.* By William A. Noyes . . 128

CONTRIBUTIONS FROM THE SHEFFIELD LABORATORY OF YALE UNIVERSITY:

LXXIII.—*On the Rearrangement of Imido-esters.* By Henry L. Wheeler 135

THE DOUBLE HALIDES OF ANTIMONY WITH ANILINE AND THE TOLUIDINES. By Howard H. Higbee 150

ON THE RANCIDITY OF FATS. By Iskar Nagel 173

NOTE.

The Wax of the Bacillariaceae and Its Relation to Petroleum . 176

OBITUARY.

Johann Carl Wilhelm Ferdinand Tiemann 178

REVIEWS.

Theoretische Chemie 179

No. 3.

CONTRIBUTIONS FROM THE CHEMICAL LABORATORY OF CORNELL UNIVERSITY:

Anethol and Its Isomers. By W. R. Orndorff and D. A. Morton 181

THE SUPPOSED ISOMERIC POTASSIUM SODIUM SULPHITES. By Geo. S. Fraps 202

CONDENSATION COMPOUNDS OF AMINES AND CAMPHOROXALIC ACID. By J. Bishop Tingle and Alfred Tingle 214

A METHOD FOR THE DETERMINATION OF THE MELTING-POINT. By M. Kuhara and M. Chikashigé 230

THE SYMMETRICAL CHLORIDE OF PARANITROORTHOSULPHOBENZOIC ACID. By F. S. Hollis 233

CONTRIBUTION FROM THE KENT CHEMICAL LABORATORY OF THE UNIVERSITY OF CHICAGO:

Stereoisomers and Racemic Compounds. By Herman C. Cooper 255

OBITUARY.

Carl Friedrich Rammelsberg 261

NOTES.

Polonium and Radium 262

Asymmetric Optically Active Nitrogen Compounds 265

REVIEWS.

Les sucres et leurs principaux dérivés 267

Modes Opératoires des essais du Commerce et de l'industrie . . 267

Water and Water Supplies 268

Outlines of Industrial Chemistry 268

Introduction to Physical Chemistry 269

A Text-book of Physical Chemistry 270

Optical Activity and Chemical Composition 271

A Short History of the Progress of Scientific Chemistry in Our Own Times 271

The Kinetic Theory of Gases 272

The Compendious Manual of Qualitative Chemical Analysis of C. W. Eliot and F. H. Storer 273
Descriptive General Chemistry 274
The Arithmetic of Chemistry 275
Experimentelle Einführung in die unorganische Chemie . . . 275
Qualitative Analyse unorganischer Substanzen 275
Les Parfums Artificiels 275

No. 4.

THE ELECTRICAL CONDUCTIVITY OF LIQUID AMMONIA SOLUTIONS. By Edward C. Franklin and Charles A. Kraus 277

ON THE CAUSE OF THE EVOLUTION OF OXYGEN WHEN OXIDIZABLE GASES ARE ABSORBED BY PERMANGANIC ACID. By H. N. Morse and H. G. Byers 313

CONTRIBUTION FROM THE CHEMICAL LABORATORY OF WESLEYAN UNIVERSITY:

Absorption Apparatus for Elementary Organic Analysis. By Francis Gano Benedict 323

The Elementary Analysis of Organic Substances Containing Nitrogen. By Francis Gano Benedict 334

CONTRIBUTION FROM THE CHEMICAL LABORATORY OF THE UNIVERSITY OF UTAH:

An Apparatus for Determining Molecular Weights by the Boiling-point Method. By Herbert N. McCoy . . 353

REVIEWS.

Elementary Chemistry 361
Victor von Richter's Organic Chemistry, or Chemistry of the Carbon Compounds 362

No. 5.

PREPARATION AND PROPERTIES OF THE SO-CALLED "NITROGEN IODIDE." By F. D. Chattaway and K. J. P. Orton . . . 363

THE ACTION OF REDUCING AGENTS UPON NITROGEN IODIDE. By F. D. Chattaway and H. P. Stevens 369

CONTRIBUTIONS FROM THE CHEMICAL LABORATORY OF HARVARD COLLEGE:

CXVII.—*On Certain Colored Substances Derived from Nitro Compounds.* By C. Loring Jackson and F. H. Gazzolo . 376

THE SOLUTION-TENSION OF ZINC IN ETHYL ALCOHOL. By Harry C. Jones and Arthur W. Smith 397

CONTRIBUTION FROM THE KENT CHEMICAL LABORATORY OF THE UNIVERSITY OF CHICAGO:

Notes on Lecture Experiments to Illustrate Equilibrium and Dissociation. By Julius Stieglitz 404

A CONTRIBUTION TO THE KNOWLEDGE OF TELLURIUM. By F. D. Crane 408

CONTRIBUTIONS FROM THE CHEMICAL LABORATORY OF CORNELL UNIVERSITY:

The Constitution of Gallein and Coerulein. By W. R. Orndorff and C. E. Brewer 425

PERMANGANIC ACID BY ELECTROLYSIS. By H. N. Morse and J. C. Olsen 431

ON CHLORINE HEPTOXIDE. By Arthur Michael and Wallace T. Conn. 444

OBITUARY.

Dr. Guillaume Louis Jacques de Chalmot 447

NOTES.

Gadolinium 447

On Inorganic Ferments 449

REVIEWS.

A System of Instruction in Qualitative Chemical Analysis . . 451

Determination of Radicles in Carbon Compounds 451

Additions 452

No. 6.

CONTRIBUTIONS FROM THE SHEFFIELD LABORATORY OF YALE UNIVERSITY:

LXXIV.—*Researches on the Sodium Salts of the Amides.* By Henry L. Wheeler 453

CONTRIBUTION FROM THE DIVISION OF CHEMISTRY, U. S. DEPARTMENT OF AGRICULTURE:

Estimation of Alkali Carbonates in the Presence of Bicarbonates. By Frank K. Cameron 471

CONTRIBUTIONS FROM THE CHEMICAL LABORATORIES OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY:

XXV.—*On the Isomorphism of Selenium and Tellurium.* By James F. Norris and Richard Mommers 486

CONTRIBUTIONS FROM THE CHEMICAL LABORATORY OF HARVARD COLLEGE:

CXVIII.—*Note on the Constitution of Diparabrombenzylcyanamide.* By C. Loring Jackson and R. W. Fuller . . 494

ON THE EFFECT OF VERY LOW TEMPERATURES ON THE COLOR OF COMPOUNDS OF BROMINE AND IODINE. By J. H. Kastle . . 500

ON THE SUPPOSED ALLOTROPISM OF PHOSPHORUS PENTABROMIDE. By J. H. Kastle and L. O. Beatty 505

CONTRIBUTION FROM THE CHEMICAL LABORATORY OF HOBART COLLEGE:

On the Action of Nitrous Acid on Ethyl Anilinomalonate. By Richard Sydney Curtiss 509

ON A MINIMUM IN THE MOLECULAR LOWERING OF THE FREEZING-POINT OF WATER, PRODUCED BY CERTAIN ACIDS AND SALTS. By Victor J. Chambers and Joseph C. W. Frazer 512

REPORT.

The Year's Advance in Technical Chemistry 520

REVIEWS.

The Theory of Electrolytic Dissociation and Some of Its Applications 529

Traité Élémentaire de Mécanique Chimique Fondée sur la Thermodynamique 531

Leçons de chimie Physique 531

Errata 532

Index 533

INDEX VOL. XXIII.

AUTHORS.

AREY, A. L. Elementary chemistry (Review) 361
Atwater, M. D. See *Wheeler, H. L.*
BARNES, B. See *Wheeler, H. L.*
Beatty, L. O. See *Kastle, J. H.*
Benedict, F. G. Absorption apparatus for elementary organic analysis 323
The elementary analysis of organic substances containing nitrogen... 334
Biltz, H. Qualitative analyse unorganischer substanzen (Review)..... 275
Experimentelle Einführung in die unorganische Chemie (Review). 275
Brewer, C. E. See *Orndorff, W. R.*
Bucher, J. E. The action of ethyl iodide on tartaric ester and sodium ethylate 70
Byers, H. G. See *Morse, H. N.*
CAMERON, F. K. Estimation of alkali carbonates in the presence of bicarbonates..... 471
de Chalmot, G. L. J. (Obituary notice) 447
Chambers, V. J. and *Frazer, J. C. W.* On a minimum in the molecular lowering of the freezing-point of water, produced by certain acids and salts..... 512
" See *Jones, H. C.*
Charabot, E. Les parfums artificiels (Review)..... 275
Chattaway, F. D., and *Orton, K. J. P.* Preparation and properties of the so-called "nitrogen iodide"..... 363
" " " *Stevens, H. P.* The action of reducing agents upon nitrogen iodide 369
Chikashigé. M. See *Kuhara, M.*
Conn, W. T. See *Michael, A.*
Cooper, H. C. Stereoisomers and racemic compounds 255
Crane, F. D. A contribution to the knowledge of tellurium..... 408
Curtiss, R. S. On the action of nitrous acid on ethyl anilinomalonate..... 509
DUHEM, P. Traité Élémentaire de Mécanique Chimique Fondée sur la Thermodynamique (Review) 531
EDGERLY, D. W. See *Norris, J. F.*
Eliot and *Storer.* Qualitative chemical analysis (Review)..... 273
Elliott, A. H., and *Ferguson, G. A.* Qualitative chemical analysis (Review)... 451
FAY, H. See *Norris, J. F.*
Franklin, E. C., and *Kraus, C. A.* The electrical conductivity of liquid ammonia solutions..... 277
Fraps, G. S. The supposed isomeric potassium sodium sulphites..... 202
Frazer, J. C. W. See *Chambers, V. J.*
Fuller, R. W. See *Jackson, C. L.*
GAZZOLO, F. H. See *Jackson, C. L.*
Gomberg, M. Diazocaffeine 50
Green, J. R. The soluble ferments and fermentation (Review)..... 86
HIGBEE, H. H. The double halides of antimony with aniline and the toluidines..... 150
Hillyer, H. W. Action of picryl chloride on pyrocatechin in presence of alkalies..... 125
Hollis, F. S. The synthetical chloride of paranitroorthosulphobenzoic acid... 233
JACKSON, C. L. and *Fuller, R. W.* Note on the constitution of diparabrombenzylcyanamide..... 494
" and *Gazzolo, F. H.* On certain colored substances derived from nitro compounds 376

Jones, H. C. The theory of electrolytic dissociation and some of its applications (Review) 529
" and *Chambers, V. J.* On some abnormal freezing-point lowerings produced by chlorides and bromides of the alkaline earths..... 89
" and *Smith, A. W.* The solution-tension of zinc in ethyl alcohol.. 397
KASTLE, J. H. On the effect of very low temperatures on the color of compounds of bromine and iodine..... 500
" and *Beatty, L. O.* On the supposed allotropism of phosphorus pentabromide..... 505
Kraus, C. A. See *Franklin, E. C.*
Kuhara, M., and *Chikashigé, M.* A method for the determination of the melting-point 230
LANDOLT, H. Optical activity and chemical composition (Review).. 271
Lassar-Cohn. Einführung in die Chemie in leichtfasslicher Form (Review).. 88
Lehfeldt, R. A. A text-book of physical chemistry (Review). 270
MAQUENNE, L. Les sucres et leurs principaux dérivés (Review)..... 267
McCoy, H. N. An apparatus for determining molecular weights by the boiling-point method 353
Meyer, H. Determination of radicals in carbon compounds (Review)..... 451
Meyer, O. E. The kinetic theory of gases (Review)..... 272
Michael, A., and *Conn, W. T.* On chlorine heptoxide..... 444
Mommers, R. See *Norris, J. F.*
Morse, H. N., and *Byers, H. G.* On the cause of the evolution of oxygen when oxidizable gases are absorbed by permanganic acid..... 313
Morse, H. N., and *Olsen, J. C.* Permanganic acid by electrolysis..... 431
Morton, D. A. See *Orndorff, W. R.*
NAGEL, I. On the rancidity of fats..... 173
Nernst, W. Theoretische Chemie (Review)..... 179
Norris, J. F. and *Fay, H.* The reduction of selenium dioxide by sodium thiosulphate..... 119
" " " " and *Edgerly, D. W.* The preparation of pure tellurium..... 105
" " and *Mommers, R.* On the isomorphism of selenium and tellurium 486
Noyes, W. A. Camphoric acid..... 128
OLSEN, J. C. See *Morse, H. N.*
Orndorff, W. R. and *Brewer, C. E.* The constitution of gallein and coerulein.. 425
" and *Morton, D. A.* Anethol and its isomers..... 181
Orton, K. J. P. See *Chattaway, F. D.*
RAMMELSBERG, CARL FRIEDRICH. (Obituary notice) 261
Ransom, J. H. On the molecular rearrangement of *o*-aminophenylethyl carbonate to *o*-oxyphenylurethane..... 1
von Richter, V. Organic chemistry, translation (Review)..... 362
SMITH, A. W. See *Jones, H. C.*
Stevens, H. P. See *Chattaway, F. D.*
Stieglitz, J. Notes on lecture experiments to illustrate equilibrium and dissociation..... 404
THORP, F. H. Outlines of industrial chemistry (Review)..... 268
Thresh, J. C. Water and water supplies (Review) 268
Tiemann, J. C. W. F. (Obituary notice) 178
Tillman, S. E. Descriptive general chemistry (Review)..... 274
Tilden, W. A. A short history of the progress of scientific chemistry in our own times (Review)..... 271
Tingle, J. B., and *Tingle, A.* Condensation compounds of amines and camphoroxalic acid..... 214
Tingle, A. See *Tingle, J. B.*

VAN 'T HOFF, J. H. Lecons de chimie physique (Review) 531
WADDELL, J. The arithmetic of chemistry (Review)..... 275
Walker, J. Introduction to physical chemistry (Review)..... 269
Wheeler, H. L. On the rearrangement of imidoesters..... 135
" Researches on the sodium salts of the amides..... 453
" and *Atwater, M. D.* Experiments with furimidomethyl ester, *p*-tolenylimidomethyl ester and β-naphthylimidoethyl ester..... 145
" and *Barnes, B.* Experiments with silver succinimide and benzoylbenzimidoethyl ester 148

SUBJECTS.

ABSORPTION apparatus for elementary organic analysis. *F. G. Benedict*.... 323
Description of apparatus and method of use.

Alkaline earths, on some abnormal freezing-point lowerings produced by chlorides and bromides of the. *H. C. Jones* and *Chambers, V. J.*..... 89

Amides, researches on the sodium salts of the. *H. L. Wheeler*..... 453
Relative ease of formation of salts with formanilide, acetanilide, propionanilide, benzamide, methylbenzamide, ethylbenzamide, benzoylbenzamide, oxindol, phthalimidine, phenyloxamide, orthoformtoluide, orthotoluamide, α-formnaphthalide, α-naphthamide, 2,4,6-trimethylformanilide, 2,4,6-trimethylbenzamide, 2,4,6-tribrombenzamide, 2,4,6-tribrom-N-dimethylbenzamide 2,4,6-tribrombenzoyl chloride and potassium hydrate, 2,4,6-methyltribrombenzoate and potassium hydrate, thioacetanilide sodium hydrate.

o-Aminophenylethyl carbonate to *o*-oxyphenylurethane, on molecular rearrangement of. *J. H. Ransom*..... 1
Theoretical; reduction of *o*-nitrophenylethylcarbonate, 14; prep. of benzoyloxyphenylurethane and benzoyl-*o*-aminophenol, 17; action of ethylchlorformate on benzoyl-*o*-aminophenol, 17; dry distillation of benzoyloxyphenylurethane, 19; benzoylcarbonyl-*o*-aminophenol, 20; *m*-nitrobenzoyloxyphenylurethane, 22; *m*-nitrobenzoylcarbonylaminophenol, 24; *m*-nitrobenzenyl-*o*-aminophenol, 24; *m*-nitrobenzoyl-*o*-aminophenol, 26; action of ethylchlorformate on *m*-nitrobenzoyl-*o*-aminophenol, 27; *m*-nitrobenzoyl-*o*-aminophenolbenzoate, 28; benzoyl-*o*-aminophenol-*m*-nitrobenzoate, 29; carbethoxyaminophenol phenylcarbamate, 31; action of chlorformate on oxydiphenylurea, 32; acyl derivatives of methyl-*o*-aminophenol, 33; carbonylmethylaminophenol, 33; prep. of *o*-methylaminophenol, 34; benzoylmethyl-*o*-aminophenol, 34; *o*-oxyphenylmethylurethane and benzoyl derivative, 35; *m*-nitrobenzoylmethyl-*o*-aminophenol, 36; methylation of oxyphenylurethane, 38; *o*-methoxyphenylurethane, 39; *o*-methoxybromphenylethylurethane, 39; *o*-anisidine phenylurea, 40; methylation of *o*-oxyphenylurethane with diazomethane, 41; *o*-aminophenylethyl carbonate, 43; action of HCl on ethoxymethenyl-*o*-aminophenol, 46; *p*-nitrophenylcarbonate, 47; synthesis of *p*-nitrophenylethylcarbonate, 48; *p*-aminophenylethyl carbonate, 48; *p*-ureidophenylethyl carbonate, 49.

Anethol and its isomers. *W. R. Orndorff* and *D. A. Morton* 181
Physical props., 181; action of iodine and formation of anisoin, 183; of HCl and formation of anethol hydrochloride, 183; of picric acid and formation of picrate, 184; of Br and formation of dibromide, 185; of N_2O_3 and formation of nitrosite, 187; of NOCl and formation of nitrosochloride, 187; fluid metanethol, 188; alcohol addition-product of anethol, 191; anethol hydrobromide, 194; action of H_2SO_4, 194; anethol dihydride, 196; anisoin, 197; methyl ether of paracresol, 198.

Anethol dibromide. *W. R. Orndorff* and *D. A. Morton*..... 185

Anethol dihydride (Parapropyl anisol), $C_{10}H_{14}O$. *W. R. Orndorff* and *D. A. Morton* 196
Anethol hydrobromide, $C_{10}H_{13}OBr$. *W. R. Orndorff* and *D. A. Morton* 194
Anethol hydrochloride, $C_{10}H_{13}OCl$. *W. R. Orndorff* and *D. A. Morton* 184
Antimony, the double halides of, with aniline and the toluidines. *H. H. Higbee* 150
Methods of prep.; discussion of possible salts and crystallographic study of compounds obtained.
Arithmetic of chemistry, the. *J. Waddell* (Review) 275
BICARBONATES, estimation of alkali carbonates in the presence of. *F. K. Cameron* 471
Bromine and iodine, on the effect of very low temperatures on the color of compounds of. *J. H. Kastle* 500
CAMPHORIC ACID. *W. A. Noyes* 128
Synthesis of 2,33-trimethylcyclopentanone, 129; 2,33-tetramethylhexanoic 1,2',6-acid, 131; dimethylcyancarboxethylcyclopentanone, 135.
Camphoroxalic acid, condensation compounds of amines and. *J. B. Tingle* and *A. Tingle* 214
Theoretical, 214; action of camphoroxalic acid on α-naphthylamine, 222; on β-naphthylamine, 222; on orthophenylenediamine, 223; on semicarbazide, 224; on aniline, 225; action of ethylic camphoroxalate on aniline, 226; on β-naphthylamine, 227; on semicarbazide, 227; on orthophenylenediamine, 228; experiments with phenylcamphoformeneamine, 229.
Carbonates in the presence of bicarbonates, estimation of alkali. *F. K. Cameron* 471
Determination by titration with a standard solution of acid sodium or potassium sulphate, using phenol phthalein as an indicator.
Chimie physique, lecons de. *J. H. Van 't Hoff* (Review) 531
Chlorine heptoxide. *A. Michael* and *W. T. Conn* 444
Preparation from perchloric acid.
Colored substances derived from nitro compounds. *C. L. Jackson* and *F. H. Gazzolo* 376
Preparation of picryl chloride, 384; action of sodic acetacetic ester with trinitranisol, 384; of malonic ester with trinitranisol and trinitrobenzol, 388; action of bromine on latter compound, 389; action of acetacetic ester on trinitrobenzol, 390; trisodic amylate addition-product of trinitrobenzol, 390; experiments on the replacement of the allyl radical in the colored compounds, 394.
DIAZOCAFFEINE. *M. Gomberg* 50
Prep. and props. of diazocaffeine, 58; caffeine-*p*-azophenol, 59; caffeine-*p*-azodimethylaniline, 60; reduction with stannous chloride, 61; prep. and props. of caffeineazo-2,4-diamido benzene, 62; caffeineazo-*p*-naphthol, 63; reactions with acetoacetic acid, 64; propylacetoacetic acid, 65; benzylacetoacetic acid, 67; nitroethane, 67; nitropropane, 69.
Diparabrombenzylcyanamide. *C. L. Jackson* and *R. W. Fuller* 494
Prep. and props., 497; decomposition with sulphuric acid to form diparabrombenzylamine, 499.
EINFÜHRUNG in die Chemie in leichtfasslicher Form *Lassar-Cohn* (Review) 88
Electrical conductivity of liquid ammonia solutions. *E. C. Franklin* and *C. A. Kraus* 277
Electrolytic dissociation, the theory of, and some of its applications. *H. C. Jones* (Review) 529
Elementary chemistry. *A. L. Arey* (Review) 361
Equilibrium and dissociation, notes on lecture experiments to illustrate. *J. Stieglitz* 404
Experiments with PBr_5 and PBr_3; PCl_3Br_2 and PCl_5; NH_4OH and ammonium salts.

Ethyl anilinomalonate, on the action of nitrous acid on. *R. C. Curtiss*..... 509
Prep. and props. of compounds.
Ethylic β-naphthylcamphoformeneamincarboxylate, $C_{24}H_{27}O_3N$. *J. B. Tingle and A. Tingle*..... 227
Ethylic phenylcamphoformeneaminecarboxylate, $C_{20}H_{25}O_2N$. *J. B. Tingle and A. Tingle*..... 226
Ethylic semicarbazylcamphoformenecarboxylate, $C_{12}H_{19}O_4N_3$. *J. B. Tingle and A. Tingle*..... 228
Ethyl iodide, the action of, on tartaric ester and sodium ethylate. *J. E. Bucher* 70
Conditions of reactions and formation of salts.
FATS, on the rancidity of. *I. Nagel*..... 173
Methods of prevention.
Ferments and fermentation, the soluble. *J. R. Green* (Review)..... 86
Freezing-point lowerings, on some abnormal, produced by chlorides and bromides of the alkaline earths. *H. C. Jones* and *V. J. Chambers*..... 89
Results with Ca, Ba, Sr, Mg, and Cd chlorides and bromides.
Freezing-point of water, on a minimum in the molecular lowering of the, produced by certain acids and salts. *V. J. Chambers* and *J. C. W. Frazer*.. 512
Action in case of hydrochloric acid, phosphoric acid, sodium acetate, zinc chloride, strontium iodide, cadmium iodide, and copper sulphate.
Furimidomethyl ester, β-tolenylimidomethyl ester, and β-naphthylimidoethyl ester. *H. L. Wheeler* and *M. D. Atwater*..... 145
Prep. of ester and action with methyl iodide, 145; prep. of β-tolenylimidomethyl ester and action with methyl iodide and alcohol, prep. of β-naphthylimidoethylester and action with ethyl iodide.
GADOLINIUM (Note)..... 447
Gallein and coerulein, the constitution of. *W. R. Orndorff* and *C. E. Brewer*.. 425
General chemistry. *S. E. Tillman* (Review)..... 274
IMIDOESTERS, on the rearrangement of. *H. L. Wheeler*..... 135
Action of benzimidomethyl ester and methyl iodide, 138; of ethyl ester and ethyl iodide, 140; prep. of diethylbenzamide, 140: action of benzimidoisobutyl ester and methyl iodide, 141; same with isobutyl iodide 142; prep. of isobutyl benzamide, 142; action of ethyl ester and isobutyl iodide, 142.
Industrial chemistry, outlines of. *F. H. Thorp* (Review)..... 268
Inorganic ferments. (Note)..... 449
KINETIC theory of gases, the. *O. E. Meyer* (Review)..... 272
LIQUID ammonia solutions, the electrical conductivity of. *E. C. Franklin* and *C. A. Kraus*..... 277
Description of apparatus and value of about 25 substances with discussion of results.
Low temperatures on the color of compounds of bromine and iodine, on the effect of very. *J. H. Kastle*..... 500
Color becomes lighter when substance is cooled.
MECANIQUE CHIMIQUE, Traite Elementaire de, Fondee sur la Thermodynamique. *P. Duhem* (Review)..... 531
MELTING-POINT, a method for the determination of the. *M. Kuhara* and *M. Chikashigé*..... 230
Metanethol. *W. R. Orndorff* and *D. A. Morton*..... 188
Molecular weights by the boiling-point method, an apparatus for determining. *H. N. McCoy*..... 353
A modification of the method of Walker and Lumsden.
Monobromanethol dibromide. *W. R. Orndorff* and *D. A. Morton*..... 185
α-NAPHTHYLCAMPHOFORMENEAMINECARBOXYLIC acid, $C_{22}H_{29}O_2N$. *J. B. Tingle* and *A. Tingle*..... 222
β-Naphthylcamphoformeneaminecarboxylic acid, $C_{22}H_{23}O_2N$. *J. B. Tingle* and *A. Tingle*..... 223

Nitrogen compounds, asymmetric optically active. (Note) 265
Nitrogen iodide, action of reducing agents upon. *F. D. Chattaway* and *H. P. Stevens* 369
Action of Na_2SO_3, H_2SO_4, As_2S_3, Sb_2O_3, $SnCl_2$, and H_2S with formation of HI.
"Nitrogen iodide," prep. and props. of the so-called. *F. D. Chattaway* and *K. J. P. Orton* 363
Nitrogen, the elementary analysis of organic substances containing. *F. G. Benedict* 334
Notes.
Asymmetric optically active nitrogen compounds 265
Gadolinium 447
Improvements in the manufacture of sulphuric acid 83
On inorganic ferments 449
Polonium and radium 262
The wax of the *Bacillariaceae* and its relation to petroleum 176
OBITUARY NOTICES.
de Chalmot, G. L. J. 447
Rammelsberg, Carl Friedrich 261
Tiemann, J. C. W. F. 178
Optical activity and chemical composition. *H. Landolt* (Review) 271
Organic analysis, absorption apparatus for elementary. *F. G. Benedict* 323
Organic substances containing nitrogen, the elementary analysis of. *F. G. Benedict* 334
Organic chemistry. *V. von Richter* (translation) (Review) 362
Oxygen, on the causes of the evolution of, when oxidizable gases are absorbed by permanganic acid. *H. N. Morse* and *H. G. Byers* 313
PARACRESOL, methyl ether of, $C_8H_{10}O$. *W. R. Orndorff* and *D. A. Morton* .. 198
Paranitroorthobenzoylbenzenesulphonic acid, lactim of, $C_{13}H_9O_4N_2S$. *F. S. Hollis* 252
Paranitroorthobenzoylbenzenesulphone chloride, $C_{13}H_8O_4NClS$. *F. S. Hollis.* 242
Paranitroorthosulphobenzoic acid, chloride of, $C_7H_3O_4NCl_2$. *F. S. Hollis* 235
Paranitroorthosulphobenzoic acid, the symmetrical chloride of. *F. S. Hollis.* 233
Action of PCl_5 on the acid potassium salt. 234; prep. of chlorides, 235; action of benzene and aluminium chloride on the chlorides, 239; action of HCl on the chloride, 243; salts of the acid, 244; action of H_2SO_4 on the chloride, 245; of water, 246; of alcohol, 246; salts of paranitroorthobenzoylbenzenesulphonic acid, 248; action of PCl_5 on the sodium salt, 259; action of conc. NH_3 on the chloride and lactim, 251; of HCl on the lactim, 253.
Parfums artificiels, les. *E. Charabot* (Review) 275
Permanganic acid by electrolysis. *H. N. Morse* and *J. C. Olsen* 431
Prep. of pure acid and determination of conductivity.
Petroleum, wax of *Bacillariaceae* **and its relation to.** (Note) 176
Phosphorus pentabromide, on the supposed allotropism of *J. H. Kastle* and *L. O. Beatty* 505
Probable presence of phosphorus heptabromide.
Physical chemistry, a text-book of. *R. A. Lehfeldt* (Review) 270
Physical chemistry, introduction to. *J. Walker* (Review) 269
Picryl chloride, action of, on pyrocatechin in presence of alkalies. *H. W. Hillyer* 125
Picryl chloride, preparation of. *C. L. Jackson* and *F. H. Gazzolo* 384
Polonium and radium. (Note) 262
Potassium sodium sulphites, the supposed isomeric. *G. S. Fraps* 202
Historical résumé and methods of work.

Pyrocatechin in presence of alkalies, action of picryl chloride on. *H. W. Hillyer* 125
Formation of a dinitrophenoxazone.
QUALITATIVE chemical analysis. *Eliot* and *Storer* (Review)..... 273
Qualitative chemical analysis. *Elliott* and *Ferguson* (Review)..... 451
RADICALS in carbon compounds, determination of. *H. Meyer* (Review)..... 451
Radium. See polonium.
Reducing agent, action of, on nitrogen iodide. *F. D. Chattaway* and *H. P. Stevens* 369
Report.
The year's advance in technical chemistry 520
Reviews.
Arithmetic of chemistry, the. *J. Waddell*..... 275
Determination of radicals in carbon compounds. *H. Meyer*.. 451
Einführung in die Chemie in leichtfasslicher Form. *Lassar-Cohn*. ... 88
Elementary chemistry. *A. L. Arey*..... 361
General chemistry. *S. E. Tillman*..... 274
Industrial chemistry, outlines of. *F. H. Thorp*..... 268
Kinetic theory of gases, the. *O. E. Meyer*..... 272
Lecons de chimie physique. *J. H. Van 't Hoff*..... 531
Optical activity and chemical composition. *H. Landolt*..... 271
Organic chemistry (Trans.). *V. von Richter*..... 362
Parfums artificiels, les. *E. Charabot*..... 275
Physical chemistry, a text-book of. *R. A. Lehfeldt*..... 270
Physical chemistry, introduction to. *J. Walker*..... 269
Qualitative chemical analysis. *Eliot* and *Storer*..... 273
Qualitative chemical analysis. *Elliott* and *Ferguson*..... 451
Scientific chemistry in our own times, a short history of the progress of. *W. A. Tilden*..... 271
Sucres et leurs principaux dérivés, les. *L. Maquenne*..... 267
Theoretische Chemie. *W. Nernst*..... 179
The soluble ferments and fermentation. *J. Reynolds Green*..... 86
The theory of electrolytic dissociation and some of its applications. *H. C. Jones*..... 529
Traité élémentaire de mécanique chimique fondée sur la thermodynamique. *P. Duhem* 531
Unorganische Chemie, experimentelle Einführung in die. *H. Biltz*... 275
Unorganischer Substanzen, qualitative analyse. *H. Biltz*..... 275
Water and water supplies. *J. C. Thresh*..... 268
SCIENTIFIC chemistry in our own times, a short history of the progress of. *W. A. Tilden* (Review)..... 271
Selenium and tellurium, on the isomorphism of. *J. F. Norris* and *R. Mommers* 486
Study of mixed salts ; double salts of tellurium with the methylamines.
Selenium dioxide, the reduction of, by sodium thiosulphate. *J. F. Norris* and *H. Fay* 119
Conditions necessary for reaction.
Silver succinimide and benzoylbenzimidoethyl ester, experiments with. *H. L. Wheeler* and *B. Barnes*..... 148
Form of N-methylsuccinimide from silver salt and methyl iodide, 148; action of benzoylbenzimido ester and ethyl iodide, 149.
Solution-tension of zinc in ethyl alcohol. *H. C. Jones* and *A. W. Smith*..... 397
Stereoisomers and racemic compounds. *H. C. Cooper*..... 255
(a). Solubility of stereoisomers in an indifferent active solvent, 255 : sodium hydrotartrates and sodium ammonium tartrates in dextrose solution ; (b). Properties of inactive mixtures, 259 : melting-point and solubility ; (c). Partial racemism, 260.
Sucres et leurs principaux dérivés, les. *L. Maquenne* (Review)..... 267
Sulphuric acid, improvements in the manufacture of. (Note)..... 83

TECHNICAL CHEMISTRY, the year's advance in (Report) 520
Tellurium, a contribution to the knowledge of. *F. D. Crane*..... 408
Methods used to isolate and purify tellurium; analysis and separation of tellurium from selenium; yellow form of the dioxide and decomposition of the tetrachloride.
Tellurium, on the isomorphism of selenium and. *J. F. Norris* and *R. Mommers* 486
Tellurium, the preparation of pure. *J. F. Norris, H. Fay* and *D. W. Edgerly*.. 105
Prep. by decomposing the basic nitrate; purification by fractional crystallization.
Theoretische Chemie. *W. Nernst* (Review)..... 179
UNORGANISCHE Chemie, experimentelle Einführung in die. *H. Biltz* (Review) 275
Unorganischer Substanzen, qualitative analyse. *H. Biltz* (Review)..... 275
WATER and water supplies. *J. C. Thresh* (Review)..... 268
ZINC in ethyl alcohol, the solution-tension of. *H. C. Jones* and *A. W. Smith*. 397